TRANE

Engineering Bulletin

Rental Services

Electrical Cable

February 2007 CHS-PRB005-EN

Preface

Warnings and Cautions. Notice that warnings and cautions appear at appropriate intervals throughout this manual. Warnings are provided to alert installing contractors to potential hazards that could result in personal injury or death, while cautions are designed to alert personnel to conditions that could result in equipment damage.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

NOTICE: Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ **WARNING**: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠**CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION: Indicates a situation that may result in equipment or property-damage only accidents.

Contents

Introduction

This engineering bulletin covers the electrical cable available to rent for temporary cooling solutions. This includes box contents, technical information, and proper cable installation and recommendations. The information contained in this bulletin is provided to ensure the safety of the equipment and its surroundings.

Trane Rental Services offers two different sizes of electrical cable to rent for customers with temporary cooling needs. The two different sizes are 2/0 awg and 4/0 awg cable. Trane provides various cable lengths and connections to support consistent and rapid deployment of equipment for temporary applications. The electrical cable is intended for connecting the temporary equipment to a building's electrical supply, generator, or a transformer.

Call Trane Rental Services 24 x 7 at (800) 755-5115 for answers to specific questions.

Units Affected

Chillers

CSCA0025 – CSCA0060 (CGAC/D/E/F)

CSCA0080 – CSCA0400 (RTAA)

CSCA0155 – CSCA0500 (RTAC)

CSCW0300 – CSCW1200 (CVHE/F)

DX Units

CSDX0025 – CSDX0050 (TCH, TEH)

Generators

Various sizes

Electrical Cable Boxes

CSCE0020F0xx – 2/0 awg cable

CSCE0040F0xx – 4/0 awg cable

Note: *Where xx represents the unique inventory number of the cable box.*

General Information

Weights and Dimensions

Each box is labeled with a placard or stenciled with the unique inventory number. The electrical cable size is indicated in the inventory number and all the cable sizes will be marked on the outside of the cable jacket. It will specify either 2/0 awg or 4/0 awg cable. Typically the 2/0 awg cable is shipped in a black plastic box and the 4/0 awg cable box is shipped in a white plastic box. Each box is designed for easy shipping and handling. The boxes are designed to be moved with a forklift or pallet truck. To avoid potential charges for missing parts when returned, each box should be inspected upon receipt. Please notify Trane Rental Services immediately if any parts are missing or damaged upon receipt of shipment. When returning cable boxes at the end of the rental project, put the cable back in each box based on how it was originally shipped. See also "Contents of Electrical Cable Box" for reference.

	Length	Width	Height	Weight
2/0 awg box	3 ft 7 in	2 ft 6 in	2 ft 6 in	425 lb
4/0 awg box	3 ft 7 in	2 ft 6 in	2 ft 6 in	600 lb

⚠WARNING

Heavy Objects!

Use a forklift of suitable capacity to move the unit. Failure to properly lift unit could result in death or serious injury or possible equipment or property-only damage.

Figure 1. Example of a typical cable box

Contents of Electrical Cable Box

Each 2/0 awg and 4/0 awg cable box contains:

100-ft Cable With Female to Male Cam-type Connectors

- (1) Red 100-ft cable with (1) female cam-type connector end and (1) male cam-type connector end
- (1) Blue 100-ft cable with (1) female cam-type connector end and (1) male cam-type connector end
- (1) Black 100-ft cable with (1) female cam-type connector end and (1) male cam-type connector end
- (1) Green 100-ft cable with (1) female cam-type connector end and (1) male cam-type connector end

Female Pigtails

Note: *Each pigtail is approximately 7 ft. See Figure 4.*

- (1) Red cable pigtail with (1) female cam-type connector end and (1) barrel lug or bare wire
- (1) Blue cable pigtail with (1) female cam-type connector end and (1) barrel lug or bare wire
- (1) Black cable pigtail with (1) female cam-type connector end and (1) barrel lug or bare wire
- (1) Green cable pigtail with (1) female cam-type connector end and (1) barrel lug or bare wire

Male Pigtails

Note: *Each pigtail is approximately 7 ft. See Figure 4.*

- (1) Red cable pigtail with (1) male cam-type connector end and (1) barrel lug or bare wire
- (1) Blue cable pigtail with (1) male cam-type connector end and (1) barrel lug or bare wire
- (1) Black cable pigtail with (1) male cam-type connector end and (1) barrel lug or bare wire
- (1) Green cable pigtail with (1) male cam-type connector end and (1) barrel lug or bare wire

Cam-type Connectors

Each 100-ft length of cable is supplied with a male cam-type connector on one end and a female cam-type connector on the other. The cam-type connectors provide quick, easy one-twist connections. Never cut or remove cam-type connectors from ends of the cable.

Figure 2. Cable with female to male cam-type connectors

Figure 3. Female to male cam-type connection

Pigtail Connectors

Each cable box has four male pigtails and four female pig-tails for non cam-type connections. Each male pigtail has a male cam-type connector on one end and a barrel lug or bare wire on the other. Each female pigtail has a female cam-type connector on one and a barrel lug or bare wire. The cable end allows for connection into a power distribution panel or non cam-type connector equipment. The pigtail can then be connected to the standard 100-ft cam-type connector cable.

Figure 4. 7-ft pigtail cable section

Figure 5. Cam-type connectors with and without cables connected

Component Specification

Electrical Cable

Features

- Extra Flexible Class K (ASTM-B) Bare annealed copper stranding
- - 45°C (-49° F) to 90°C (194° F), 2000 Volt Rating, flame retardant
- Resistant to oil, water, acid, gas, ozone, cuts, tears and abrasion
- (UL) 2000 volt rating, C(UL) 600 volts continuous use
- Manufactured to (UL) & C(UL) standard 1581
- Surpasses NEC 400 requirements and may be used in any application where Type W, G or G-GC cable is used

Construction

Conductor

- Bare, annealed electrolytic copper
- 30 awg Class K rope lay stranding

Dual Insulated Jacketing Technology

Inner Jacket. A separator of high contrast color is applied between the conductor and outer sheath for your added safety. This provides increased insulation, added flexibility, and allows you to easily identify damage or wear.

Outer Jacket. TYPE PPE (FT5) provides oil, water, acid, gas, ozone, resistance, flame retardant, durability and extreme flexibility at all operating temperatures.

Indented into the outer Jacket: TSC Portable Power Cable (UL) Type PPE 90ºC Dry 75ºC Wet 2000V E204219 C(UL) PPC/TPE FT-5 600V 90ºC

Size (awg)	Stranding	Strand Nominal OD	Finished Nominal OD	Weight (lb/ft)
2/0	1330 x 30	0.450	0.820	0.603
4/0	2109 x 30	0.580	0.965	0.895

Technical Data

Ampacity of Cable Type PPE - Based on Ambient Temperature of 30°C (86°F)

	Temperature Rating of Cable		
Size (awg)	**60°C (140°F)**	**75°C (167°F)**	**90°C (194°F)**
2/0	225	265	300
4/0	300	360	405

The ampacities for single conductors shall be permitted where the individual conductors are not installed in raceways (or buried) and are not in physical contact with each other except in lengths not to exceed 24 inches where passing through the wall of an enclosure.
Reference: NEC Code, Table 400.5(B), 2005 Edition

Correction Factors

For ambient temperatures other than 30°C (86°F), multiply the allowable ampacities shown above by the appropriate factor shown below.

		Temperature Rating of Cable		
Ambient Temp (°C)	**Ambient Temp (°F)**	**60°C (140°F)**	**75°C (167°F)**	**90°C (194°F)**
21-25	70-77	1.08	1.05	1.04
26-30	78-86	1.00	1.00	1.00
31-35	87-95	0.91	0.94	0.96
36-40	96-104	0.82	0.88	0.91
41-45	105-113	0.71	0.82	0.87
46-50	114-122	0.58	0.75	0.82
51-55	123-131	0.41	0.67	0.76
56-60	132-140	N/A	0.58	0.71
61-70	141-158	N/A	0.33	0.58
71-80	159-176	N/A	N/A	0.41

Reference: Correction Factors, NEC Code, Table 310.17, 2005 Edition

Installation Instructions

This section advises Trane Service Companies or contractors acting on the behalf of a Trane Sales Organization as to the proper installation of electrical cable provided as part of a Trane Rental Services rental project.

It is critical that this bulletin is followed to minimize premature or catastrophic failure of this cable. Compliance with these instructions will minimize complaints and issues associated with electrical cable installation.

Trane disclaims liability for damages and costs resulting from third party failure to follow the instructions in this bulletin.

⚠WARNING

Live Electrical Components!

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

- All wiring must conform to National Electric Code (NEC) guidelines as well as state and local codes. A licensed electrician should verify that all codes are being met and make sure all the wiring done between the rental equipment and the supplied power meets all codes. A licensed electrician is recommended for any rental installation.

⚠WARNING

Electric Shock!

Controls must be protected from exposure to water. allowing water to drip on the ignition system could result in death or serious injury.

- Do not allow the cam-type connectors to sit in water or depressions that may fill with water when it rains. Make sure to elevate or support cam-type connectors if that will be an issue.

CAUTION

Equipment Damage!

Do not cut or remove cam-type connectors from ends of the cable, do not have the cable rolled up in a pile and do not bury or put cable in conduit or raceway. Failure to follow instructions may result in equipment damange.

- Never cut or remove cam-type connectors from ends of the cable. This can affect the integrity of the cable. If the cable is cut or cam-type connectors removed the customer will be responsible for any charges related to replacement of the cable.
- Lay out all the cable flat to the ground, leaving 1-inch space on all sides to allow the heat that the cable is generating to dissipate. Do not have the cable coiled up or in a pile. This will cause extra heat that can melt or damage the cable.
- Always ensure the cam-type connectors are properly connected.
- Do not directly bury or put cable in conduit or a raceway. This will de-rate the cable ampacity and could cause damage to the cable and the equipment. Cable ampacity is rated for "free-air".
- Some of the rental equipment requires multiple wires per phase. Always ensure that the number of wires per phase will handle the required amps of the rental equipment.

In the event a section of electrical cable is damaged, please call the Trane Rental Services Technical Service Advisor in Charlotte, NC; mark the problem area and tag the cable BAD and place it back in the shipping box.

Exceptions: Any exceptions to the guidelines established in this bulletin must be authorized in writing by the Trane Rental Services Technical Service Advisor, Charlotte, NC.

If there are any questions regarding how to install the electrical cable, contact the Trane Rental Services Technical Service Advisor at 1-800-755-5115.

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For more information, contact your local Trane office or e-mail us at comfort@trane.com

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